Amendments to the Specification:

Please amend paragraph 22 as shown in the following amended paragraph:

Figure 14 illustrates the antifungal activity of improved chitinases from the 4th round of shuffling (4P1/2_B5 (SEQ ID NO:68), 4P1/7_H9 (SEQ ID NO:70), 4Q1/3_H10 (SEQ ID NO:72), 4Q1/5_B11 (SEQ ID NO:74), 4R2/1_G10 (SEQ ID NO:80), 4R2/5_H11 (SEQ ID NO:82), and 4R2/9_B2 (SEQ ID NO:84)). Purified chitinases were added to germinating spores of *Fusarium moniliforme* and their efficiency at inhibiting fungal growth was recorded by taking absorbance measurements at 600 nm. The average concentration of chitinase required to inhibit fungal growth by 50% (IC_{50}) is reported. IC_{50} values are given in bovine serum albumin (BSA) and in ovalbumin equivalents, thus reflecting the standard used for the determination of protein concentrations.

Please amend paragraph 23 as shown in the following amended paragraph:

Figure 15 illustrates improvements in the antifungal activity of later shuffled chitinases over previously shuffled chitinases (r1AB2 (SEQ ID NO: 28), r1AD4 (SEQ ID NO: 30, r1AD6 (SEQ ID NO: 32), r1AG9 (SEQ ID NO: 34), r1AH8 (SEQ ID NO: 36), r1AH9 (SEQ ID NO: 38), r1BG5 (SEQ ID NO: 40), r2C2 (SEQ ID NO: 12), r2C5 (SEQ ID NO: 42), 4M1/1_H2 (SEQ ID NO: 24), 4M1/11_C10 (SEQ ID NO: 22), 4M1/26_C2 (SEQ ID NO: 26), 4N1/2_H9 (SEQ ID NO: 50), 4N1/11_B11 (SEQ ID NO: 62), 4N1/14_B3 (SEQ ID NO: 58), 4N1/23_G4 (SEQ ID NO: 52), 4N1/30_D3 (SEQ ID NO: 64), 4N1/33_F4 (SEQ ID NO: 60), 4N1/35_G5 (SEQ ID NO: 66), 4N1/68_E4 (SEQ ID NO: 54), 4N1/75_D3 (SEQ ID NO: 48), 4N 1/80_F8 (SEQ ID NO: 46), 4N1/88_F9 (SEQ ID NO: 56), 4N1/95_H3 (SEQ ID NO: 44), 4P1/2_B5 (SEQ ID NO:68), 4P1/7_H9 (SEQ ID NO:70), 4Q1/3_H10 (SEQ ID NO:72), 4Q1/5_B11 (SEQ ID NO:74), 4R2/1_G10 (SEQ ID NO:80), 4R2/5_H11 (SEQ ID NO:82), 4R2/9_B2 (SEQ ID NO:84), 4Q2/10_B8 (SEQ ID NO:76) and 4Q2/13_F8(SEQ ID NO:78)). Purified chitinases were added to germinating spores of *Fusarium moniliforme* and their efficiency at inhibiting fungal growth was recorded by taking absorbance measurements at 600 nm. Activity measurements are expressed in number of folds the clones are improved over the wild-type clone 1-2SC (chitinase A) (SEQ ID NO:1).

Please amend paragraph 26 as shown in the following amended paragraph:

Figure 18 a comparative nucleotide alignment between the sequences shuffling 4P1/2_B5 (SEQ ID NO:68), 4P1/7_H9 (SEQ ID NO:70), 4Q1/3_H10 (SEQ ID NO:72), 4Q1/5_B11 (SEQ ID NO:74), 4R2/1_G10 (SEQ ID NO:80), 4R2/5_H11 (SEQ ID NO:82), and 4R2/9_B2 (SEQ ID NO:84).

Please amend paragraph 27 as shown in the following amended paragraph:

Figure 19 illustrates a comparative amino acid alignment between shuffling 4P1/2_B5 (SEQ ID NO:68), 4P1/7_H9 (SEQ ID NO:70), 4Q1/3_H10 (SEQ ID NO:72), 4Q1/5_B11 (SEQ ID NO:74), 4R2/1_G10 (SEQ ID NO:80), 4R2/5_H11 (SEQ ID NO:82), and 4R2/9_B2 (SEQ ID NO:84) gene products of the invention.

Please amend paragraph 219 as shown in the following amended paragraph:

The clones with the best activity were grown and expressed in bulk. The so produced chitinases, which represented ~90% of the protein content of the Pichia culture supernatants, were concentrated 100 to 200-fold with centrifugal concentration devices and dialyzed over night against reaction buffer (20 mM sodium acetate, pH 5.5). Chitinases normalized for protein concentration were used in endochitinase and in CM-chitin-RBV hydrolysis assays under substrate-saturating conditions. Under such conditions, the chitinolytic reactions were linear with respect to enzyme concentration. The activity of the improved chitinases was expressed in multiples of the activity of the best wild-type control protein (chitinase A (SEQ ID NO:1)). Table 2 demonstrates the results of the endochitinase assays ~~CM-chitin-RBV hydrolysis assays~~. Table 3 shows the results of the CM-chitin-RBV hydrolysis assays ~~endochitinase assays~~.

Please amend paragraph 227 as shown in the following amended paragraph:

Purified chitinases were added to germinating spores of *Fusarium moniliforme* and their efficiency at inhibiting fungal growth was recorded by taking absorbance measurements at 600 nm. Activity measurements were compared to those obtained with the previously identified hit 4N1/88_F9 (SEQ ID NO:56), and improvements relative to the wild-type clone 1-2SC (chitinase A) (SEQ ID NO:1) were calculated. Ovalbumin and bovine serum albumin (BSA)

were used as standards for protein determinations. Therefore, IC_{50} values are expressed in ovalbumin and in BSA equivalents. Average fold improvements are described. A summary of improved hits is provided in Figure 15. Figures 16, 17, 18 and 19 show alignments of DNA and protein sequences of the forth round hits. Figure 16 illustrates the nucleotide differences between the clones 4Q2/10_B8 (SEQ ID NO:76) and 4Q2/13_F8(SEQ ID NO:78) and Figure 17 illustrates amino acid differences between the gene products 4Q2/10_B8 (SEQ ID NO:76) and 4Q2/13_F8(SEQ ID NO:78). Figure 18 illustrates the nucleotide differences between the clones 4P1/2_B5 (SEQ ID NO:68), 4P1/7_H9 (SEQ ID NO:70), 4Q1/3_H10 (SEQ ID NO:72), 4Q1/5_B11 (SEQ ID NO:74), 4R2/1_G10 (SEQ ID NO:80), 4R2/5_H11 (SEQ ID NO:82), and 4R2/9_B2 (SEQ ID NO:84) and Figure 19 illustrates amino acid differences between the gene products 4P1/2_B5 (SEQ ID NO:68), 4P1/7_H9 (SEQ ID NO:70), 4Q1/3_H10 (SEQ ID NO:72), 4Q1/5_B11 (SEQ ID NO:74), 4R2/1_G10 (SEQ ID NO:80), 4R2/5_H11 (SEQ ID NO:82), and 4R2/9_B2 (SEQ ID NO:84).

Please amend the title of Table 7 on page 91 as shown in the following amended title:

~~Anti-fungal scores obtained with~~ Effect of shuffled chitinases r2C2 (SEQ ID NO:12) and 4M1/11_C10 (SEQ ID NO:22) on C. elegans hatching and development

Please amend the title of Table 8 on page 92 as shown in the following amended title:

Effect of denaturation after heat inactivation of shuffled chitinases on C. elegans development

Please amend the title of Table 9 on page 93 as shown in the following amended title:

Concentration dependant inhibition of C. elegans development by shuffled ~~comparison of~~ chitinases